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ABSTRACT

This paper questions both what was being tested in prior instructional media research on the educational value of film and television and the value of some of those findings. An alternative way of conceptualizing the communication process that occurs when students view an instructional film or television program is proposed, which places viewers in the role of active interpreters who construct meaning rather than as the passive recipients of a single message. It is suggested that many of the research studies on the use of instructional media are inconclusive, contradictory, and frequently based on invalid or simplistic questions. Two frequently-proposed arguments in support of the use of film or television are discussed: the claim that students learn more when they view film or television than when taught by conventional classroom teaching methods and the argument that is based on the idea that "one picture is worth a thousand words." After assessing what can be used from these traditional arguments, the final sections suggest some new justifications that can be developed from more recent research approaches. Seventeen references are listed. (LMM)

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# DEVELOPING A JUSTIFICATION FOR THE USE OF FILM AND TELEVISION IN EDUCATION: SUGGESTIONS FOR A NEW APPROACH

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PREFACE

When the CUFC's Marketing Committee decided that some peopie needed reminding of the educational value of film and television it was not surprising that they looked to the vast body of instructional media research to provide evidence. The research which came most immediately to mind was of the type which compares the amount of information gained through viewing a film or television program with what is learned when the same topic is taught by more traditional classroom methods.

While not entirely ignoring the insights from that huge body of research this paper questions what it was that those experiments were really testing -- and, therefore, the value of some of their findings. Instead it proposes an alternative way of conceptualizing the communication process which occurs when students view an instructional film or television program. Instead of seeing viewers as the passive recipients of a single message it places them in the role of active interpreters who construct meaning.

Although some of the ideas on which this new conceptualization is based are drawn from fields which have not been part of the mainstream of instructional media research the idea of the active viewer is not new. It can be found in the instructional film research which was conducted in the period before behaviorist psychology achieved hegemony and the viewer was reduced to the level of an organism responding to a stimulus. In effect this paper is a call for a return to those earlier ideas.

*GOING TO SCHOOL AT THE "MOVIES":*

*AN INTERVIEW WITH THOMAS A. EDISON*

*By Mary Master Needham*

*"I intend to do away with books in the school - that is, I mean to try to do away with schoolbooks," added Mr. Edison, purely as an afterthought. He smiled as he said it - a shrewd and determined smile.*

*In the process of catching my breath I must have gasped "How?" For an answer he came back to me, Yankee fashion, with the question "How?" and stopped to enjoy the effect. Then he explained: "By moving pictures." He leaned back in the chair by his desk in the laboratory and nodded his head.*

. . . . . .

*"Why, when we get these moving pictures in the school the child will be so interested that he will hurry to school in the morning to get there before the bell rings, instead of lagging behind and playing hookey. Won't be able to keep away! Any why? Because it's the natural way to teach - through the eye. That's the way we learn from nature.*

*Saturday Evening Post. November 30, 1912*

Although Edison's views on the effects of introducing film into the schools seem a little naive we would not have to look very far to find similar statements. In the early part of this century "the movies" rapidly became a regular source of entertainment for America's youth. And from the earliest days of the nickelodeon the movies were viewed by some as a bad influence because they promoted 'the wrong values'.[1] Instead, many asked, why not use this powerful new medium in a positive way by harnessing its obvious appeal to youth in the service of education.

But film, and later television were oversold by the enthusiasts. They claimed that these media would revolutionize education, failing to recognize that without structural changes in the system of education these media could only supplement the traditional processes. As with many innovations the focus was on what was technically possible. The economic and social constraints which would limit those possibilities were ignored until the disparity between the projected promise and the actual performance had to be explained.[2] Film and television have both made important contributions to education but in very few cases has this been a revolution. However, this does not mean that we cannot develop powerful justifications for their continued, and even increased use. What is required is a change in our justifications for the use of these media.

Arguments in support of the use of film and television in education are often based on claims of increased productivity. A review of empirical research results (usually highly selective) is presented which shows 'conclusively' that a particular medium is more 'effective'.[3] Unfortunately effectiveness is frequently defined in a rather limited way since learning outcomes are reduced to those which can be easily measured -- usually the retention of facts. This paper is an attempt to develop an alternative argument based on the perspectives used in some of the more recent media research.

Clearly, there are differences between film and the electronic video of television; however, this paper is not concerned with those differences. At some points it draws on educational film research while at others it is based on the results of educational television research. However, it is grounded

in the fundamental belief that many of the results of research into the use of instructional media are inconclusive, contradictory, and frequently based on invalid or simplistic questions. (Support for this thesis will be presented later.) For this reason the 'traditional' arguments in support of film or television -- based on the idea that a pupil can learn a certain percent more through film or television instruction than through conventional teaching -- will not be repeated here.

This paper will also not attempt to develop an argument for the use of film or television based on claims that they will reduce costs. Although both media have proved cost effective in helping either to improve the quality, or extend the coverage of education in many countries this involves the development of special film or television materials as part of an integrated, multi-media learning system.[4] These extensive projects are, however, in the minority. Most of the uses of film and television in education are as supplements to conventional teaching. They will, therefore, always be perceived as an additional cost. To justify their use our argument must demonstrate that the contribution they can make to essentially conventional classroom situations outweighs those additional costs.

With these considerations in mind we will begin by evaluating two arguments which have frequently been proposed in support of the use of film or television. First, the claim that students learn more when they view film or television than when taught by more conventional classroom teaching methods. Second, the argument which is based on the rather

vague idea that "one picture is worth a thousand words". Both of these 'traditional' arguments for the use of film or video will now be considered in more detail. After assessing what we can make use of from these traditional arguments the final section of this paper will suggest some new justifications which can be developed from some of the more recent research approaches.

## TWO TRADITIONAL ARGUMENTS

### 1. Students Learn More in Less Time

To understand why this argument became so pervasive, and the flaws inherent in it, we must first review the style of instructional media research which was predominant until about the end of the 1960's. In doing so we must locate this research in the context of both American social science and American society.

It is outside the scope of this paper to attempt an explanation of the reasons why the social sciences wanted to emulate the methods of the natural sciences and why empiricist, positivist methods became the dominant paradigm for research. For the moment we shall have to content ourselves with the recognition that a desire to achieve a particular form of 'objectivity' based on the philosophy and methods of the natural sciences led to the experimental design being seen as the ideal to which virtually all social science researchers aimed. Most instructional media researchers were no different.[5] The adoption of the experimental design for their research affected the decisions they made about what were appropriate topics for investigation. It set rules by which they decided what data were admissible as evidence

and the forms of data analysis they used. Finally, it can be shown to have determined, to a large extent, the kind of conclusions they could reach.

We must also recognize that these educational researchers were not isolated from the society in which they lived and worked. Machines had been used throughout industry to increase productivity and it is hardly surprising that many looked to machines to do the same for educational productivity.[6] The result was that the sort of questions asked by instructional media researchers have tended to be whether film and television could help students to learn more in the same time? Or whether with their help teachers could teach more students at the same time? Because of the constraints the adoption of this perspective produces -- especially when allied with a behaviorist model of learning, and an experimental research design -- much of this research is inconclusive, contradictory and was asking the wrong question anyway.

Experimental comparisons of film/television and conventional classroom teaching found ready sources of funding and became an increasingly popular source of PhD's throughout the fifties and sixties. But what was the outcome of all this research effort? A closer look at what all these studies were really comparing reveals why they were prone to finding "no significant difference" between film/television and conventional classroom teaching.

The better designed studies used some form of randomization to cancel out any differences between the subjects within each of the groups being taught by the two methods. But it was always difficult to decide which variables to control for among the subjects and in the teaching/learning

environment. However, let us be generous and presume all relevant variables were adequately controlled for. A pretest would then be given to demonstrate that the average level of prior knowledge about the topic to be taught was the same in both groups at the beginning of the experiment. This meant that at the end of the experiment any difference in the amount learnt by the film/television group when compared to the group which had received conventional teaching could be attributed to the effect of the different teaching methods they had experienced.

It is, however, important to look more closely at the character of these two teaching methods. The face-to-face teacher would be recorded on film or transmitted to another room by television. To keep the comparisons valid the face-to-face teacher would have to forego any interaction with the group -- since this would not be available to the video group. Similarly the host of production devices normally available to the television producer would not be possible since it was only the transmission of the live, face-to-face lesson. Finally, the topic being taught had to be one which was equally suited to both forms of presentation.

When the lesson was over a post-test would be issued and the average amount of learning in each group calculated. Frequently the finding was that there was "no significant difference" between the two groups in the amount learnt. Sometimes one group would score more highly -- a result which could come down in favor of either treatment and usually remained unexplained. Of course it was always possible that some unforeseen variable had not been

controlled for. As Bates (1982 p.220) has suggested, these

> ...experiments are designed to test the comparative effectiveness of different media teaching the same things in the same ways, the only difference being the actual media used to do this. However, such research merely tests the efficiency of each medium in delivering the same message, and ignores the potential of each medium to treat the same material in different ways, or to bring in new material which could not be handled so well in other ways.

Of course it would be grossly unfair to characterize all instructional media research in this way. This is a caricature of this methodology but it does caution us that we must approach the research evidence with a healthy skepticism. It does not, however, mean that we can learn nothing from this research. Nobody can still seriously question whether students can learn from film or video.

> During the last few decades we have frittered away an enormous amount of research time asking relatively useless questions about the media of instruction. Can the media teach? has been asked over and over again, and over and over again the answer has come back: of course, students can learn effectively from the media, from any medium. Can they teach as well as a teacher? The answer: what they can do, they can do as well as a classroom teacher, sometimes better. It depends on the performance of the teacher, the content of the media, what is being taught to whom. Is one medium more effective than others? For some purposes, probably yes, but overall there is no superlative medium of instruction, any more than there is one simple algorithm for selecting one medium over others. (Schramm 1977 p.14.)

In our attempt to justify the use of film and television in education this quotation has its sting in the tail. There is no question that students can learn from film or video but there is no simple algorithm that tells us

under precisely which circumstances film and television will be the most appropriate instructional media. Traditional arguments for the use of film and television such as "a picture is worth a thousand words", suggest that there is something inherent in the visual media which makes them of particular value. Recent research is beginning to provide a firmer theoretical base from which we can justify these intuitive statements. It is in these new insights that we can find support for the use of film and television in education. This brings us to the second traditional argument in favor of film or video use.

2. One Picture is Worth a Thousand Words

We can all think of occasions when a film or television presentation would be better than a written description. For example, special techniques can help us to see things which are too small, too large, too inaccessible, or too distant in time for us to view conveniently. And when the complex interrelationships between several moving components have to be understood, a film or television presentation can be invaluable. A written description of how an automobile engine functions may not be particularly illuminating to a non-engineer, but an animated film showing in simplified form the particular roles of the individual parts and their relationships with one another can give us a much better understanding. Many other examples could be listed but to understand why this is so it is perhaps better to think of one of the many situations where one medium is not so clearly advantageous.

Let us consider a situation where we want to begin a project with a class of students on the question of environmental pollution. Both books and films on the topic are readily available to us but the films each have a rental charge.

In these difficult economic times we must economize as much as possible. Should we then decide that in the circumstances the books will be adequate? One way to answer this question is suggested by Salomon (1979, and 1980). This is not the place to engage in a detailed discussion of his work but a rather simplified account will probably serve our purposes.

Salomon (1979) argues that the "symbol systems" of the various media -- that is, the way they code and construct the information they contain -- should be seen as their most important attributes. Learning from a medium occurs when the learner has internalized that medium's symbol system, with its accompanying "grammar", and can use them to extract knowledge from the media 'text' being studied. So the essential differences between the media for Salomon is "...their modes of gathering, packaging and presenting information, that is" their symbol systems" (Salomon 1980 p. 328). He therefore concludes that for education the important implication is that these different symbol systems call upon different mental skills to extract knowledge from them.

Returning to our example of the project on environmental pollution, we can see that if we view the film about the effects of environmental pollution we will gain knowledge about the problem. Reading the books about the topic could provide us with the same information, however, the mental processes in which we engaged to gain that knowledge will have been different. This is because the symbol systems employed in the two media, and the grammar which provides the rules governing how those symbols may be linked together

to produce meaning, are not the same. Salomon (1980 p. 337) suggests that both symbol systems are important and that we should incorporate both in the learning environments which we provide for our students.

> ...we want our students to use rich and alternative modes of internal representations, not just the verbal one, and we want them to examine the world through more than one symbol system. After all, insights of many scientists did not start with propositions. On the contrary it was imagery - often adapted from the world of art - which serve as the initial key hole through which phenomena were examined.

Recently Salomon's perspective (Salomon 1981) has changed in a very significant way.

> ...I began to feel uneasy about...the assumption of external events operating about us, the innocent subjects....
> . . . . . .
>
> I gradually became intrigued by the possibility...that the commerce between people and their surroundings is reciprocal rather than unidirectional. (Salomon 1981 pp. 9-10.)

As Salomon himself is quick to point out this idea is not really new -- in the case of instructional film research a recognition of this idea is evident in some of the earliest work -- but it is an idea which became lost in that period of instructional media research when behaviorist psychology achieved hegemony. Today the idea that what people bring to the viewing situation is important in determining the meaning they extract is increasingly widely accepted and demands that we begin to see the viewing situation in a much more complex way. Students watching a film or television presentation are not merely passive receivers of a message, they are active interpreters who produce many different meanings.

## A 'NEW' ARGUMENT: THE VIEWER AS ACTIVE INTERPRETER

In their review of Instructional Film Research 1918-1950, Hoban and Van Ormer (1950) demonstrate that they did not see the audience of an instructional film as merely the passive receivers of a message.

> The reaction of an audience to a motion picture is intimately related to what the audience brings to the motion picture as well as what the motion picture brings to the audience.
>
> Contrary to rather widely held popular opinion, communication by motion picture is not a mechanical transfer of information. Reactions are dynamic. They involve interaction of the audience with content and technique of the film.
>
> An audience does not see, hear, understand, accept, or remember exactly, or even approximately, everything the film is intended to present. Instead, it selects and interprets. Sometimes it discounts and disregards. Always it tends to impose its own meanings on the experience. (Hoban and Van Ormer 1950 p. 7-1.)

Here the audience is seen as individuals who actively interpret the films content. Unfortunately, this perceptive insight of Hoban and Van Ormer has often been overlooked and the role of the viewer reduced to that of a passive observer responding to the stimulus of the message in the film. A paper by Flory titled "Films for Learning," which was included as part of the massive report by the Commission on Instructional Technology to the Secretary of Health Education and Welfare (Flory 1970), illustrates just how pervasive this passive view of the audience had become. After noting how many hours children spend watching television each day Flory (1970 p. 214) reminds us how 'successful' television advertisements can be.

> These 50-second mini-films offer children the excitement of motion; sound; and, in more and more homes, color. The film attracts the child's attention and never lets go, for at the same time, it directs the youngster to "ask Mommie to get Hum-Dum cereal for you at the food store today." And little Johnny or Susie does just that, as I can testify from my own observations!
>
> . . . . . .
>
> In reality, what we've been describing from the world of advertising is the classic stimulus-response-reward pattern that psychology

> professors have been lecturing about for decades. The advertiser, who must make sure his potential customers learn to want to buy his product, has found that he can reach people through the motion-color-and-sound of film. And the amazing thing is that he can get his film message across to any age group....

To understand the fundamental importance of these two different ways of conceptualizing the audience we must identify the model of the communication process which is implicit in each. This is important because the role we assign to film or television in education is a direct result of the model we have of the communication process -- even if we are not consciously aware of what that model is.

## Two Alternative Models of Communication

The view of the audience as the passive recipients of a message (exemplified here in the quotation from Flory) has a long history and is based on a linear model of the communication process combined with a mechanistic stimulus-response approach. In this perspective we can identify one of the earliest and most widely influential models of the communication process. Lasswell's formulation, first proposed in 1948, can be presented as a model in the following way.

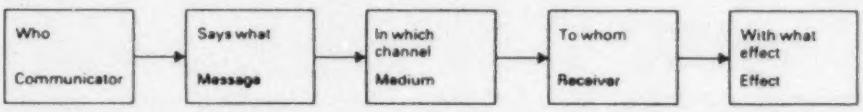


FIGURE 1

LASSWELL'S 1948 FORMULATION OF THE COMMUNICATION PROCESS
(From McQuail and Windahl, 1981)

For our purposes here two aspects of this model must be emphasized. First, the linearity of the model is clear; with a one-way flow from the communicator to the receiver. Second, there is an assumption that the communicator intends to influence the receiver in some way.

At first sight both aspects would seem appropriate for a model of the way instructional film and television communicate since the producers of the films do have a clear intent in wanting the viewer to learn something and there is (usually) no provision for feedback from the receiver to the communicator which might affect the message. Unlike face-to-face communication (as in a conversation where feedback from the listener affects what the speaker says and how he or she says it) the viewer of instructional film or television material can not influence the form which the material takes since this was fixed much earlier by the producer. As a result the message receiver would appear to be relatively passive -- an organism responding to the stimulus of the message. In the more mechanistic of stimulus-response models these reactions are also seen as relatively uniform across individuals and highly predictable.

And so the question arises how, given the inability of the audience to influence directly the communicator and the message through some form of feedback, we can think of the audience as active rather than passive. To answer this we must change the way we think of communication. Instead of a linear, one-way process in which someone attempts to influence someone else (the classic idea of persuasion which led to so many studies of political propaganda, attitude change, and voting behavior) we must begin to see communication as a social process which is neither linear, as in the formulation above, nor circular, as in the model suggested by Osgood and Schramm in 1954.

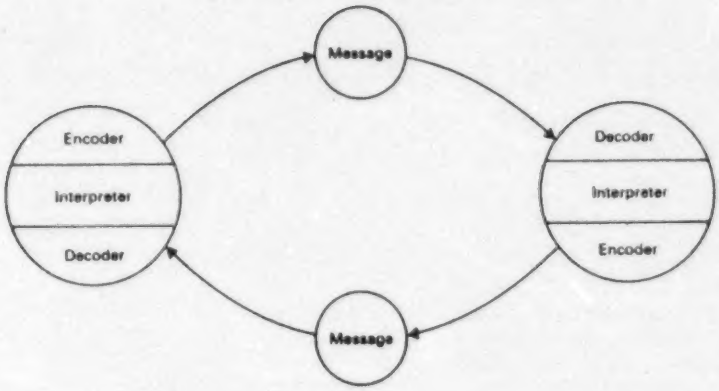


FIGURE 2

OSGOOD AND SCHRAMM'S 1954 MODEL OF THE COMMUNICATION PROCESS
(From McQuail and Windahl, 1981)

While this model has advantages over the earlier linear model when we are thinking of interpersonal communication (as in face-to-face conversation) it clearly presents problems when we try to apply it to an audience viewing a film. Both parties in the communication are not equal since the viewer has little opportunity to "encode" a message for the film maker or television producer to "decode". The bottom half of the model is, therefore, essentially non-existant. But this does not mean that we must return to the linear model outlined earlier. Some aspects of the second model can be retained. If we see film and television material as producing meaning through the use of symbols whose meanings are culturally defined the idea of encoding and decoding as stages in the communication process can help us to gain a better insight into what is happening.

Television and film produce meaning through the combination of audio and video forms to produce a 'language'. As with the more conventional use of the term language (as in, "the english language") the 'language' of film and television consists of a series of signs which are combined together

following the rules of a 'grammar' to produce a meaningful discourse.[7] The signs we see in films and television are frequently symbols. They possess a meaning which is culturally defined (a matter of convention) and their meaning may change over time. To illustrate this idea we can take a rather simplistic example. In western movies for many years it was a convention that the good guys wore white hats and the bad guys' hats were black. There is nothing inherently good in a white hat or, conversely, bad in a black hat but through repetition these symbols gradually became meaningful. That is, a film producer could use this convention to encode meaning into a film (information about a particular character( in the knowledge that most of the audience would decode this sign in the way the film maker intended. Of course if this western film was then shown in a culture in which western films of this era had not previously been seen the sign would not produce the intended understanding in the audience. We should also note that the agreement on the meaning of a sign may change over time. Today, due perhaps to overuse, the white hat, black hat convention is seen as a cliché and is no longer widely used. Film and television today use other signs to produce similar understandings in the audience. Unfortunately, all too often it is the "beautiful people" who are the good guys, while the bad guys are shown with some form of physical characteristic (or 'defect') which does not conform to currently accepted standards of beauty.

Signs such as these are combined together to produce a meaningful discourse. The film maker or television producer uses chains of signs which she or he believes the audience will decode in the expected way to produce the intended meaning. But what happens if these chains of signs do not produce the same meaning for the audience as they did for the producer?

What if the frameworks of knowledge of the two are not congruent? The meaning encoded by the producer will not be decoded into the same meaning by the audience. The encoding/decoding process can be summarized graphically as follows.[8]

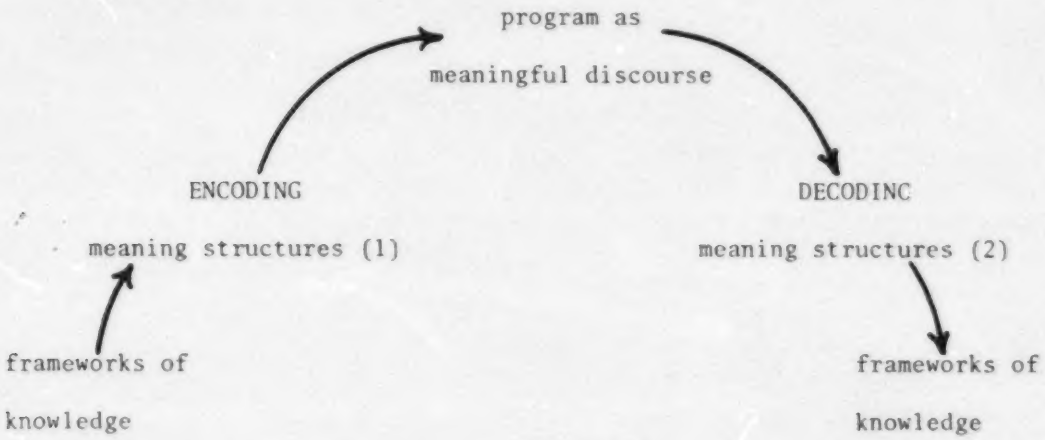


FIGURE 3

THE ENCODING/DECODING PROCESS
(ADAPTED FROM HALL, 1980)

If there is not a high degree of symmetry between the frameworks of knowledge of the film maker or television producer and those of the audience 'misunderstandings' will occur. This is probably most apparent to us when we view a film from a very different culture which was not intended for international distribution. For example, the meaning of dance sequences in a film made in India would be transparently clear to an audience from that culture but entirely obscure to most of us. The film maker or television producer assumes a great deal of shared understandings; and he or she must do so for without them communication will not occur.

It is clear that if we adopt this second model of the communication process the audience cannot be seen as the passive receivers of the message of the film or television material. The audience is actively involved in the production of meaning and, since the frameworks of knowledge which different members of the audience bring to the viewing situation will not be identical, there will always be a plurality of meanings. Consequently there is no single message but instead a range of meanings which individual viewers can produce from the film or television program on the basis of the knowledge, attitudes, understandings, etc. which they bring to the viewing situation. To a greater or lesser extent the content and structure of the material will constrain the range of possible meanings but it is difficult to conceive of a situation where all the children in a class would produce exactly the same meaning.[9]

It is in the reasons for these multiple interpretations that a more substantial justification for the use of film and television in schools can be found. But to develop this argument we must change our perception of appropriate educational outcomes from that we encountered in the instructional media experiments described earlier. Just as we had to develop a more complex model of the communication process so we must also recognize that the intended outcomes of education are many and varied; going far beyond the simple retention of facts.

## The Social Role of Television

Few people would wish to restrict the role of education to the acquisition of facts. Other outcomes, while perhaps more difficult to measure, are also valued by society. For example, we want students to be able to analyze the world in which they live in increasingly sophisticated ways. However, much of our experience of this world is not gained at first hand. Instead it is

mediated to us through television. Many of us have never been in a court of law and yet most of us have a surprisingly extensive store of knowledge about what happens in these settings. From Perry Mason, through The Defenders, and a host of similar programs we have built up a framework of knowledge and expectations. Surprisingly, most schools ignore this and dismiss television as "the boob tube" -- something which students should be encouraged not to view. Television is not seen as a legitimate source of knowledge. Our argument in support of the use of film and television in education should be based on the opposing case -- that film and television are legitimate sources of knowledge and that schools should be encouraged to use more film and television in their curricula. These media already play a significant role in helping children, and adults, to develop the basic framework of understandings and expectations with which they inscribe meaning on the world around them.[10] Schools can help to change childrens' expectations of film and television by showing them that, despite the apparently realistic and transparent depiction of the world by these media it is always a construction of reality. If children approach film and television with the expectation that they are transparent media which require little mental effort to understand the level of processing will be shallow and the learning outcome will be superficial. But this shallow processing is not inevitable and childrens' expectations of these media can be changed.[11]

## CONCLUSIONS

It should no longer be necessary to present arguments which demonstrate that people can learn from film or television. A moments introspection will be enough to make anyone aware of just how much of the knowledge we have of the world in which we live has been learnt from television. If this is not

adequate a massive amount of empirical evidence is now available which does prove that learning can occur.

A more difficult argument to develop is one which identifies the precise learning situations when film or television can make a significant contribution. If we restrict our perception of appropriate educational outcomes to the retention of facts the research evidence is inconclusive and contradictory. However, if we begin to think of the viewer as an active interpreter rather than a passive receiver it is possible to argue that film and television can play important roles in achieving educational goals to which most people would want to subscribe.

If a role for education is to help individuals develop more sophisticated ways of analyzing, interpreting, and giving meaning to their world recent research suggests that it should not rely entirely on the print medium. Film and television can present material in different ways because the symbol systems they use differ from those of print. Research suggests that developing the skills necessary to extract knowledge from these media may promote the use of mental skills which are different from those which we use when learning from the medium of print. In a culture where television is such a pervasive force, and provides us with so much of the knowledge we have of the world, it is vital that everyone should learn these skills at an early age and also learn that, despite the apparently realistic and transparent picture of the world which it conveys, it is all only a construction of reality. If we continue to approach television with an expectation that it is a shallow, transparent medium which requires little mental effort to understand the level of processing

will be shallow and the learning outcome will be superficial. The use of film and television in schools can help to change the expectations which people bring with them when they view television. Film and television can be rich sources of information since they present things in ways which print cannot. However, if we approach them with the expectation of a shallow medium that is what we will find. On many occasions this expectation will be correct -- much television programming is shallow and worthy of only very superficial attention -- but this is not always the case.

NOTES

[1]In a brief review of their research Wartella and Reeves (1983) demonstrate how the arrival of each new media technology (film, radio, television, etc) has prompted similar public concerns, and academic research, about its harmful effects on children.

[2]It is not only in instructional media that attention is focused on the technical possibilities without considering the social and economic constraints. The "blue-sky" predictions which heralded the development of cable television in the U.S. are a good example of the broader consequences of this. See Garnham (1983) for an interesting discussion of this with particular reference to cable television and direct broadcast satellites in Britain.

[3]While it is probably unfair to single out any individual paper written from this perspective (since there were so many) Moldstad (1974) is a representative example of this genre.

[4]The use of television by the British Open University is a good example of how the broadcast media can be used to extend the provision of education to groups not previously served. Schramm (1977) gives a brief description of the Open University's system, together with examples from other countries.

[5]For an interesting history of the rise of the idea of a "science of society" based on the methods of the natural sciences see Purcell (1973); especially Chapter 2, "Naturalism and objectivism in the social sciences." and Chapter 3, "Methodology and Morals."

[6]This point is made by Schramm (1977 p. 17).

[7]These ideas are all drawn from the semiotic approach to the analysis of media content. The brief description here is inevitably only a very partial statement of some of the major points. For those wishing to read a fuller statement of the ideas many sources could be suggested, however, Fiske (1982), and Fiske and Hartley (1978) provide one of the more accessible introductions to the approach. In addition, Gombrich (1974) provides a series of interesting examples which demonstrate that "...the visual image is not a mere representation of 'reality' but a symbolic system."

[8]The encoding/decoding model provides a useful 'tool' which helps us to think about what happens when a class of students views an instructional film or television program. However, as with all models, it is not without its problems. These have been outlined very clearly by Morley (1981) who used the model in his research. The paper by Gombrich (1974) cited above is also useful for the clarity with which it demonstrates that the meaning we extract from a picture depends on the prior knowledge we bring to the viewing situation.

[9]The concept of "preferred meanings" is a very useful idea and is developed further in Hall (1980). But Morley (1981) again presents some important thoughts about problems inherent in the concept.

[10]See Salomon (1981), Chapter 4 "Schema and educational issues." for a discussion of the acquisition of these frameworks (or as Salomon calls them schemata) and their implications for education.

[11]Salomon (1981 pp. 123-149) gives a more detailed discussion of how these changes can occur and their results.

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